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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------------|-------------|-----------------------|---------------------|------------------|
| 10/583,987 | 01/23/2007 | Carlos Ludlow-Palafox | M0025.0354 | 8430 |
| 32172 | 7590 | 08/17/2010 | EXAMINER | |
| DICKSTEIN SHAPIRO LLP | | | BHAT, NINA NMN | |
| 1633 Broadway | | | ART UNIT | PAPER NUMBER |
| NEW YORK, NY 10019 | | | 1797 | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|------------------------|-----------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/583,987 | LUDLOW-PALAFIX ET AL. | |
| | Examiner | Art Unit | |
| | N. Bhat | 1797 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 22 June 2006.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-33 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-33 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 22 June 2006 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

1. The preliminary amendment of June 22, 2006 is acknowledged by the Examiner.

2. In the Specification, applicant is requested to insert on Page 1, first paragraph, --

This application is a 371 of PCT/GB04/50043 filed December 22, 2004.--

3. The abstract of the disclosure is objected to because applicant has used the Abstract from the PCT and this abstract includes extraneous information. Applicant is requested to redraft the abstract on a separate page following the claims in a single paragraph containing no more than 150 words in length and avoiding legal phraseology such as "invention, embodiment, disclosed, etc". Correction is required. See MPEP § 608.01(b).

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carlos Ludlow-Palafox et al. "Microwave-Induced Pyrolysis of Plastic wastes" in combination with Holland et al., EP 0 780 457.

Ludlow-Palafox et al. teach the invention substantially as claimed. Specifically Ludlow-Palafox et al. teach a microwave-induced pyrolysis system which includes a microwave energy source which is operative communication with a reactor, the vessel is placed in a specially molded base made of microwave transparent/insulating material, the reactor has a agitation system that consists of an impeller with two 45° pitched blades, and a stainless steel shaft connected to a motor which is capable of rotating the impeller.

[Note page 4750, paragraph 2. 1] Ludlow-Palafox et al. teach that the apparatus includes valving which permit an inert gas to purge the incoming material to avoid the presence of the oxygen in the reactor which can be monitored. The products of pyrolysis leave the reactor and pass through a system of condensers. The reactor permits the pyrolysis of aluminum polymer laminates, such as toothpaste tube laminates. In operation both the aluminum laminate and a microwave inducing material (carbon particulate or carbon black) is in admixture with the polymer-metal composite material. Ludlow-Palafox et al. teach that the apparatus include means for separating the aluminum and carbon particles by conventional sieving techniques, thus permitting the pyrolysis of the plastics and reclaiming any useful products and further permits reclamation and of the aluminum minimizing wastes.

However, Ludlow-Palafox et al. do not teach specifically using two reactors for effecting continuous recycling of a metal/organic laminate.

Holland et al. teach pyrolysis of organic material which includes preheating the organic material without pyrolysis of the organic material to elemental carbon by means of a hot gas stream and/or microwave energy followed by complete microwave induced pyrolysis. The pre-heating step as described by Holland et al. produces a solid fission produce containing elemental carbon. The elemental carbon serve as a microwave absorbing material, and the material is then pyrolyzed in a microwave pyrolysis reactor. The preheater temperature which is effected by either microwave energy or by using a hot gas stream at a temperature range between 200-300°C, the temperature for preheating has been discussed by Holland et al. and is depended upon the type of material which is to be pyrolyzed. [Note the abstract, Page 2, lines 36-41 and lines 56-57] Holland teach that a conveyor is used in order to convey the material through the pre-heating zone to feed the preheated material to the pyrolysis zone and forward it through the zone and onward for after treatment. There is a purge lock both for supplying the material to be pyrolyzed as well as the solid fission product from the reactor to substantially prevent in flow of oxygen containing gas into the pyrolysis zone.[Note Figure 2 and Page 4, lines 39-50] Holland et al. teach that metals can be separated from the solids upon exit of the pyrolysis reactor usining magnets or other conventional solid separating devices. [Note Page 4, lines 53-54]

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include plural reactors for the microwave pyrolysis of metal containing polymeric material from reading in its totality the teachings of Ludlow-Palafox et al. in combination with Holland et al. because Ludlow-Palafox et al. teach a method

and apparatus which includes introducing a metal laminated containing polymeric material such as toothpaste containers to a microwave pyrolysis reactor, the reactor includes stirring or agitating means and includes means for introduce particulate microwave absorbing material, the include magnetrons to introduce microwave energy to the reactor to effect pyrolysis, the reactor include means to vent the pyrolysis gas which can be condensed and reclaimed. Further described are means to separate the aluminum metal material and solids from the reactor. The only deficiency in Ludlow-Palafox et al. is that the method takes place using one reactor and there is no preheating taking place. Holland teach the deficiencies of Ludlow-Palafox et al. wherein a microwave pyrolysis reactor which includes two zones which can be read or interpreted as including two reactors or two chambers is used to preheat the material to be pyrolyzed. Holland teach that the pretreatment heating of the material can be accomplished by either microwave or by using other heating means.[Note Claim3 of Holland], which is a teaching or suggestion or provides evidence that using two reactors or two chambers are within the purview of the ordinary artisan. Also, it has been well established that duplication of parts for its duplicate effect is notoriously well known and the court held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced. [Note the case law of *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960)] Holland et al. further teach that to preheat the material to be pyrolyzed improves the overall energy requirements and power consumption required and to include the step of preheating and/ using more than one reactor to pyrolyze metal-polymer laminate or composite material to the process and/or

apparatus taught in Ludlow-Palafox et al. renders the invention as a whole obvious to one having ordinary skill in the art.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. GB 2 420 542 teach a screw conveyor with a microwave generator used for pyrolyzing municipal wastes. Holland teach the destruction of macromolecular waste which includes the method of mixing plastics with a pulverulent carbon followed by subjecting the mixed to microwave irradiation in an inert atmosphere to cause pyrolysis of the plastics. The resulting solids are recycled to the microwave zone. Edwards teach a method thermally treating plastic material using microwave energy. Cha teach a process for microwave decomposition of hazardous material. Cha '662 teach a process for microwave destruction of contaminated biological wastes. Cha'684 teach a microwave destruction process and apparatus of contaminated water based liquids by adding carbonaceous material to enhance the efficiency of microwave energy. Kantor et al. teach a method and apparatus for reducing organic waste using microwave pyrolysis.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Bhat whose telephone number is 571-272-1397. The examiner can normally be reached on Monday-Friday, 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Calderola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. Bhat/
Primary Examiner, Art Unit 1797